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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/595,206

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Takeshi Nakamura

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EXAMINER

JOSHI, SUNITA

ART UNIT

PAPER NUMBER

2614

NOTIFICATION DATE

DELIVERY MODE

12/08/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/595,206	<b>Applicant(s)</b> NAKAMURA, TAKESHI	
	<b>Examiner</b> SUNITA JOSHI	<b>Art Unit</b> 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-13, 15, 17-21, 23, 24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-13, 15, 17-21, 23, 24 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/23/2006, 05/09/2006, 12/12/2007, 12/02/2008</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 9 – 13, 15, 17-21, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA), in view of Akitaro Nakahira (GB 2087688 ). References to AAPA herein refer to the instant applications Pre-Grant Publication ( US 2008260186A1)**

**As to Claim 9**, AAPA teaches *a speaker comprising* (Figure 11 #1):

*a diaphragm arranged to vibrate in a direction extending along a surface of the speaker so as to emit sound waves in a vibration direction of the diaphragm* ( diaphragm 6 vibrating back and forth. See at least Figure 11, page 1 lines 12-19 in applicant's

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specification) , but do not explicitly teach:

*at least one wall member arranged on a sound-wave emission side of the diaphragm;*

*wherein*

*the at least one wall member and the diaphragm are secured to each other, and the wall member vibrates along with the vibration of the diaphragm.*

However, Akitaro in related field (Speaker device) teaches a diaphragm for a loudspeaker having body 1 and fitting portion 2, joined to the outside periphery of the body 1 of diaphragm. See at least Akitaro on page 4 lines 15-29, Figure 1, 2. Akitaro further teaches *at least one wall member arranged on a sound-wave emission side of the diaphragm* (as radial ribs 5a or concentrically circular ribs 5b arranged on the body 1 of the diaphragm. See at least Figures 6, 7, 10, 13-19, 23 and 24); *wherein the at least one wall member and the diaphragm are secured to each other, and the wall member vibrates along with the vibration of the diaphragm* ( as ribs 5a and 5b provided on the body 1 of the diaphragm. This teaches the ribs are integrally formed with the diaphragm and therefore secured to the diaphragm, thus vibrating along with the vibration of diaphragm). At the time of invention, it would have been obvious to one of ordinary skill in the art to include ribs onto the body of the diaphragm so as to provide improve tone quality of the reproduced sound. See at least Akitaro on page 4 lines 41-50.

Regarding the following limitation, *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”,*

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AAPA in view of Akitaro also shows in Figure 18 , 19 ribs 5b extends on the body 7 towards the fitting portion8. See at least page 5 lines 85-100, but do not explicitly teach *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”*. However, the examiner considers that it would have been an obvious matter of design choice to provide ribs with similar height configuration to the maximum amplitude of the diaphragm because it has been held that changing size is a matter of obvious design choice to a person of ordinary skill in the art. See at least In re Dailey, 149 USPQ 47.

**As to Claim 10**, AAPA in view of Akitaro teaches the limitations of Claim 9, and *the inner surface of the at least one wall member is arranged substantially parallel to the vibration direction of the diaphragm* (as ribs 5b see at least Figure 10) .Further, as shown in Figure 14, 15 the ribs 5a and 5b have inner surfaces parallel to body 7.)

**Claim 11**, AAPA in view of Akitaro teaches the limitations of Claim 9, and *the at least one wall member includes a frame surrounding the sound-wave emission side of the diaphragm* ( # 5a, Figure 7)

**Claim 12**, AAPA in view of Akitaro teaches the limitations of Claim 9, and *the at least one wall member has a cross-sectional shape that is substantially the same as a shape*

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*of a rim of the sound-wave emission surface of the diaphragm (as concentrically circular ribs 5b which is same as the circular fitting portion 2 of the diaphragm. See at least Figure 6)*

**As to Claim 13**, AAPA in view of Akitaro teaches the limitations of Claim 9, and the at least one wall member includes a plurality of wall members that are arranged concentrically with respect to a center of the diaphragm ( as ribs 5b as shown in Figure 10)

**As to Claim 15**, AAPA teaches *a speaker comprising* (Figure 11 #1):

*a diaphragm arranged to vibrate in a direction extending along a surface of the speaker so as to emit sound waves in a vibration direction of the diaphragm ( diaphragm 6 vibrating back and forth. See at least Figure 11, page 1 lines 12-19 in applicant's specification) , but do not explicitly teach:*

*a plurality of tubular elements touching and arranged side by side on a sound- wave emission side of the diaphragm, each of the plurality of tubular elements having an inner surface extending substantially parallel to a vibration direction of the diaphragm;*

*wherein*

*the plurality of tubular elements and the diaphragm are secured to each other, and the plurality of tubular elements vibrate along with the vibration of the diaphragm.*

However, Akitaro in related field ( Speaker) teaches *a plurality of tubular elements touching and arranged side by side on a sound- wave emission side of the diaphragm, (*

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as radial ribs 5a and concentrically circular ribs 5b provided on body 7 as shown in Figure 13. Further, *each of the plurality of tubular elements having an inner surface extending substantially parallel to a vibration direction of the diaphragm ( as shown in Figure 14, 15 the ribs 5a and 5b have inner portion parallel to the body 7) ; wherein the plurality of tubular elements( ribs 5a and 5b) and the diaphragm( diaphragm Figure 13, 14, 15 with body 7 and fitting portion 8) are secured to each other, and the plurality of tubular elements vibrate along with the vibration of the diaphragm.* Since Akitaro teaches the ribs 5a and 5b are provided on the body 1 of the diaphragm, it is obvious that the ribs are integrally formed with the diaphragm and therefore secured to the diaphragm, thus vibrating along with the vibration of diaphragm). At the time of invention, it would have been obvious to one of ordinary skill in the art to include ribs onto the body of the diaphragm so as to provide improve tone quality of the reproduced sound. See at least Akitaro on page 4 lines 41

Regarding the following limitation, *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”,*

AAPA in view of Akitaro also shows in Figure 18 , 19 ribs 5b extends on the body 7 towards the fitting portion8. See at least page 5 lines 85-100, but do not explicitly teach *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”*. However, the examiner considers that it would have been an obvious matter of design choice to provide ribs with similar height configuration to the maximum amplitude of the diaphragm because it has been held that changing size

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is a matter of obvious design choice to a person of ordinary skill in the art. See at least In re Dailey, 149 USPQ 47.

**As to Claim 17**, AAPA teaches *a speaker unit ( 1, Figure 11) comprising: a cabinet including a surface having an opening therein ( Figure 11, # 2 , page 1 [0005]); a speaker ( woofer 3, Figure 11) attached to an inner side of the surface and aligned with the opening ( as speaker 3 attached to the duct 10 which extends inwardly from the front panel of the cabinet 2. See at least page 1 [0005]); wherein the speaker includes:*

*a diaphragm arranged to vibrate in a direction extending along a surface of the speaker so as to emit sound waves in a vibration direction of the diaphragm; ( diaphragm 6 vibrating back and forth. See at least Figure 11, page 1 lines 12-19 in applicant's specification) , but do not explicitly teach:*

*at least one wall member arranged on a sound-wave emission side of the diaphragm; wherein*

*the at least one wall member and the diaphragm are secured to each other, and the wall member vibrates along with the vibration of the diaphragm.*

However, Akitaro in related field (Speaker device) teaches a diaphragm for a loudspeaker having body 1 and fitting portion 2, joined to the outside periphery of the body 1 of diaphragm. See at least Akitaro on page 4 lines 15-29, Figure 1, 2. Akitaro further teaches *at least one wall member arranged on a sound-wave emission side of the diaphragm* (as radial ribs 5a or concentrically circular ribs 5b arranged on the body 1



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of the diaphragm. See at least Figures 6, 7, 10, 13-19, 23 and 24); *wherein the at least one wall member and the diaphragm are secured to each other, and the wall member vibrates along with the vibration of the diaphragm* ( as ribs 5a and 5b provided on the body 1 of the diaphragm. This teaches the ribs are integrally formed with the diaphragm and therefore secured to the diaphragm, thus vibrating along with the vibration of diaphragm). At the time of invention, it would have been obvious to one of ordinary skill in the art to include ribs onto the body of the diaphragm so as to provide improve tone quality of the reproduced sound. See at least Akitaro on page 4 lines 41-50.

Regarding the following limitation, *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”*,

AAPA in view of Akitaro also shows in Figure 18 , 19 ribs 5b extends on the body 7 towards the fitting portion8. See at least page 5 lines 85-100, but do not explicitly teach *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”*. However, the examiner considers that it would have been an obvious matter of design choice to provide ribs with similar height configuration to the maximum amplitude of the diaphragm because it has been held that changing size is a matter of obvious design choice to a person of ordinary skill in the art. See at least In re Dailey, 149 USPQ 47.

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**As to Claim 18**, Akitaro teaches the limitations of Claim 17, and *the inner surface of the at least one wall member is arranged substantially parallel to the vibration direction of the diaphragm* (as ribs 5b see at least Figure 10. Further, as shown in Figure 14, 15 the ribs 5a and 5b have inner surfaces parallel to body 7.)

**Claim 19**, AAPA in view of Akitaro teaches the limitations of Claim 18, and *the at least one wall member includes a frame surrounding the sound-wave emission side of the diaphragm* (# 5a, Figure 7)

**Claim 20**, AAPA in view of Akitaro teaches the limitations of Claim 17, and *the at least one wall member has a cross-sectional shape that is substantially the same as a shape of a rim of the sound-wave emission surface of the diaphragm* (as concentrically circular ribs 5b which is same as the circular fitting portion 2 of the diaphragm. See at least Figure 6)

**As to Claim 21**, AAPA in view of Akitaro teaches the limitations of Claim 17, and *the at least one wall member includes a plurality of wall members that are arranged concentrically with respect to a center of the diaphragm* ( as ribs 5b as shown in Figure 10)

**As to Claim 23**, AAPA in view of Akitaro teaches the limitations of Claim 17, and *the*

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*cabinet has a substantially rectangular box-shaped configuration ( as cabinet 2, Figure 10 in AAPA)*

**As to Claim 24**, AAPA teaches *a speaker unit comprising ( 1, Figure 11) comprising: a cabinet including a surface having an opening therein ( Figure 11, # 2 , page 1 [0005]); a speaker ( woofer 3, Figure 11) attached to an inner side of the surface and aligned with the opening ( as speaker 3 attached to the duct 10 which extends inwardly from the front panel of the cabinet 2. See at least page 1 [0005]); wherein the speaker includes:*

*a diaphragm arranged to vibrate in a direction extending along a surface of the speaker so as to emit sound waves in a vibration direction of the diaphragm; ( diaphragm 6 vibrating back and forth. See at least Figure 11, page 1 lines 12-19 in applicant's specification) , but do not explicitly teach:*

*a plurality of tubular elements touching and arranged side by side on a sound-wave emission side of the diaphragm, each of the plurality of tubular elements having an inner surface extending substantially parallel to a vibration direction of the diaphragm;*

*wherein*

*the plurality of tubular elements and the diaphragm are secured to each other, and the plurality of tubular elements vibrate along with the vibration of the diaphragm.*

However, Akitaro in related field ( Speaker) teaches *a plurality of tubular elements touching and arranged side by side on a sound- wave emission side of the diaphragm, ( as radial ribs 5a and concentrically circular ribs 5b provided on body 7 as shown in*

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Figure 13. Further, *each of the plurality of tubular elements having an inner surface extending substantially parallel to a vibration direction of the diaphragm ( as shown in Figure 14, 15 the ribs 5a and 5b have inner portion parallel to the body 7) ; wherein the plurality of tubular elements( ribs 5a and 5b) and the diaphragm( diaphragm Figure 13, 14, 15 with body 7 and fitting portion 8) are secured to each other, and the plurality of tubular elements vibrate along with the vibration of the diaphragm.* Since Akitaro teaches the ribs 5a and 5b are provided on the body 1 of the diaphragm, it is obvious that the ribs are integrally formed with the diaphragm and therefore secured to the diaphragm, thus vibrating along with the vibration of diaphragm). At the time of invention, it would have been obvious to one of ordinary skill in the art to include ribs onto the body of the diaphragm so as to provide improve tone quality of the reproduced sound. See at least Akitaro on page 4 lines 41

Regarding the following limitation, *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”,*

AAPA in view of Akitaro also shows in Figure 18 , 19 ribs 5b extends on the body 7 towards the fitting portion8. See at least page 5 lines 85-100, but do not explicitly teach *“a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm”*. However, the examiner considers that it would have been an obvious matter of design choice to provide ribs with similar height configuration to the maximum amplitude of the diaphragm because it has been held that changing size is a matter of obvious design choice to a person of ordinary skill in the art. See at least In re Dailey, 149 USPQ 47.

**As to Claim 26**, AAPA in view of Akitaro teaches the limitations of Claim 24, and *the cabinet has a substantially rectangular box-shaped configuration* ( as cabinet 2, Figure 10 in AAPA).

***Response to Amendment***

4. Applicant's arguments submitted on 10/04/2010 has been fully considered but are not persuasive.

Regarding limitation, "*a height of the at least one wall member is substantially the same as a maximum amplitude of the diaphragm*", Akitaro, Nakahira ( GB 2087688) teaches the height of ribs 5a as one of a design factor for the diaphragm to radiate low, high or mid frequencies. As seen in Akitaro on page 6, lines 30- 80, the height of ribs 5a can be altered based on design choice( See at least Akitaro, on page 6, line 98, height of ribs for diaphragm of woofer is 0.8mm and on page 6 line 73, height of ribs for diaphragm of tweeter is 0.7mm, and the evidence that the modification to the height of ribs, such that it is substantially same as a maximum amplitude of the diaphragm, was within the capability of a person of ordinary skill in the art can be found in (US Patent 1574856 ) to Burton on page 2 lines 29-65, where the height of the ribs can be varied to adjust the amount of high frequency energy radiated. Therefore, rejection of claims 9, - 13, 15, 17-21, 23 and 26 under 35 U.S.C 103(a) is maintained.

***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUNITA JOSHI whose telephone number is (571)270-7227. The examiner can normally be reached on Monday thru Friday 8.00AM -- 5.00P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 5712727499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
P.O. Box 1450  
Alexandria, Va. 22313-1450

**Or faxed to:**

(571) 273-8300, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".

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*/SUNITA JOSHI/*

*Examiner, Art Unit 2614*

*/CURTIS KUNTZ/*

*Supervisory Patent Examiner, Art Unit 2614*